

III. In the Specification (Clean Sheet)

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Field of the Invention

The present invention relates to nucleic acid sequences encoding novel *Babesia canis* associated proteins, to cDNA fragments, recombinant DNA molecules and live recombinant carriers comprising these sequences and to host cells comprising such nucleic acid sequences, cDNA fragments, recombinant DNA molecules and live recombinant carriers. Furthermore, the invention relates to proteins encoded by these nucleotide sequences, to vaccines for combating *Babesia canis* infections and methods for the preparation thereof, to *Babesia canis* associated antigenic material for use in vaccines and to the use of *Babesia canis* associated antigenic material in the manufacture of vaccines. Also, the invention relates to diagnostic tools for the detection of *Babesia canis* associated nucleic acid sequences, for the detection of *Babesia canis* associated antigens and for the detection of antibodies against *Babesia canis* associated antigenic material.

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Background

Babesiosis, like malaria, is a disease which has a focal character. The reason for this is that the pathogen is transmitted by ticks that feed on a certain reservoir of parasites present in the vertebrate population. Only where

cases babesiosis is a problem because of man's activities through inbreeding of genetic traits and/or transporting animals to unfamiliar environments where babesiosis is endemic (Callow, L.L and Dalglish, R.J., 1982).

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Summary

It is i.a. an objective of the present invention to provide *Babesia canis* related proteins which are able, each separately, or when combined, to induce protection against *Babesia canis* infection in dogs. It was surprisingly found now, that two such novel proteins exist that are specifically associated with *Babesia canis*: they are not found in the *Babesia* species *B. rossi*.

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Detailed Description

It is well-known in the art, that many different nucleic acid sequences can encode one and the same protein. This phenomenon is commonly known as wobble in the second and especially the third base of each triplet encoding an amino acid. This phenomenon can result in heterology of about 30% for two different nucleic acid sequences still encoding the same protein. Therefore, two nucleic acid sequences having a sequence homology of about 70% can still encode one in the same protein.